REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-9 remain in the application. Claim 1 has been amended.

In item 1 on pages 2-3 of the above-identified Office action, claims 5 and 7 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement because the claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

More specifically, the Examiner has stated that there is neither an adequate description nor enabling disclosure as to how and in what manner the measured values of the bending angle sensor recited in claim 5 and the strain gauge recited in claim 7 are to be combined to obtain the desired result.

The subject matter of claim 5 includes a sensor disposed for recording a bending angle. The subject matter of claim 7 includes a strain gauge disposed on a sensing arm. Both claims are directed to the subject matter of claim 1.

Therefore, the combination of claims 1, 5, and 7 is directed to a fuel rod testing assembly of claim 1 wherein a sensor is disposed for recording a bending angle of a bending joint and which further includes a strain gauge disposed on a sensing arm. This combination of constructive features is described, for example, on page 14, line 11 to page 15, line 18 of the specification. This description is well in accordance with the enablement requirement.

A "combined analysis" of measured values of the strain gauge and the bending angle sensor has not been claimed and is not part of the claimed subject matter. It is noted that the enablement requirement only refers to the claimed subject matter. Since "combined analysis" of measured values of the strain gauge and the bending angle sensor is not part of the claims, the Examiner has no basis for his enablement requirement rejection.

In addition, the specification states on page 15, lines 13-18 that the position of the measuring head "can be" but does not have to be determined by a combined analysis.

In item 2 on page 3 of the above-identified Office action, claims 5 and 7 have been rejected under 35 U.S.C. § 112, first paragraph, as based on a disclosure that is not enabling.

Please refer to the above detailed discussion with regard to the enablement requirement rejection.

It is noted that the Examiner has stated himself that the combination of the measured values of the strain gauge and bending angle sensor is not included in the claims.

It is accordingly believed that the claims meet the requirements of 35 U.S.C. § 112, first paragraph. Should the Examiner find any further objectionable items, counsel would appreciate a telephone call during which the matter may be resolved. The above-noted changes to the claims are provided solely for cosmetic and/or clarificatory reasons. The changes are neither provided for overcoming the prior art nor do they narrow the scope of the claims for any reason related to the statutory requirements for a patent.

In item 3 on page 4 of the above-identified Office action, the drawings have been objected to under 37 CFR 1.83(a) as not showing every feature of the invention specified in the claims.

More specifically, the Examiner has stated that the bending angle sensor and the bending point recited in claim 5 must be shown or the feature(s) cancelled from the claim(s). Fig. 1 has been amended to symbolically show the bending joint 11 and the bending angle sensor 13. The specification has been amended accordingly.

In item 4 on pages 5-6 of the above-mentioned Office action, claims 1-3, 6, and 8-9 have been rejected as being anticipated by Bacvinskas et al. (US Statutory Invention Registration No. H1262) under 35 U.S.C. § 102(b).

In item 5 on pages 7-8 of the above-mentioned Office action, claim 4 has been rejected as being unpatentable over Petit (US Pat. No. 5,754,611) in view of Kleesattel (US Pat. No. 3,308,476) under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and the claims have, therefore, not been amended to overcome the references. However, the language of claim 1 has been amended in an effort to even more clearly define the invention of the instant application. Support for the changes is found on page 14, line 11 to page 15, line 11 of the specification.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

> a plurality of measuring devices each having a sensing arm with a laterally deflectable free end and a measuring head carried on said free end of said sensing arm; and
>
> a carrier body carrying said plurality of said measuring devices and being mounted on a plurality of guide rolls disposed to be guided along a fuel rod;
>
> said measuring head of said measuring device having:
>
> > a sensor housing;
> >
> > a sensing tip for determining a contour or geometry characteristic value of the fuel rod, said sensing tip being disposed on said sensor housing; and
> >
> > a layer thickness measuring probe integrated in said sensor housing for measuring a thickness of a layer on the fuel rod.

According to the invention of the instant application, a measuring head (1) has a sensor housing (2), a layer thickness measuring probe (30) integrated in the sensor housing (2), and a sensor tip (4) disposed on the sensor housing (2). In other words, the thickness measuring probe (30) and the sensor tip (4) are "integrated in"/"disposed on" the same sensor housing (2).

Bacvinskas et al. do not show a sensor housing. The Examiner has stated in the penultimate paragraph on page 5 of the

Office action that the language "sensor housing" reads on either one or both of the clamp bracket 53 and pivoting fixture 52 in Fig. 4. Applicants respectfully disagree.

First, a bracket or a fixture cannot be understood as a housing. A housing is a means to encase, enclose or shelter. This is not the case for the bracket 53 or the fixture 52 of Bacvinskas et al.

Second, as indicated above, the sensor housing 2 of the invention of the instant application is common to both the thickness measuring probe 30 and the sensing tip 4. The bracket 53 and fixture 52 of Bacvinskas et al. are not common to an eddy current probe 45 and a magnescale probe assembly 46. The bracket 53 and the fixture 52 are merely provided for the eddy current probe 45. The magnescale probe assembly 46 has a separate housing (see column 4, lines 21-26).

As clearly stated in claim 1 of the instant application, each measuring device has a sensing arm (12) with a laterally deflectable free end (10) and a measuring head (1) carried on the free end (10) of the measuring arm (12). In other words, the measuring device (50) in principle includes the sensing arm (12) and the measuring head (1) carried on the measuring arm (12) (see, e.g., Fig. 3).

Claim 1 of the instant application claims for a plurality of identical measuring devices (50) of the above-mentioned kind, which are commonly provided on a same carry body (56) carrying the plurality of measuring devices. As indicated above, a measuring head (1) of each of the measuring devices includes a combination of a sensing tip (4) and a thickness measuring probe (30).

Bacvinskas et al. differ from the invention of the instant application in the following aspects:

- In Bacvinskas et al., the measuring devices are not identical, but they are distinct from each other.

- Bacvinskas et al. do not have a measuring device (50) of the invention of the instant application. Bacvinskas et al. disclose as a first measuring device an eddy surrent probe 45 and as a second measuring device a magnescale probe assembly 46. However, the eddy current probe 45 and the magnescale probe assembly 46 are distinct from the measuring head (1) of the invention of the instant application. The inventive measuring head (1) of the invention of the instant application includes a combination of a sensing tip (4) for determining a

contour or geómetry characteristic value on the one hand and a thickness measuring probe (30) for measuring a thickness of a layer on a fuel rod on the other hand.

- Finally, Bacvinskas et al. do not disclose a combined measuring head (1) at the free end (10) of a measuring arm (12) as recited in claim 1 of the instant application.

In summary, the invention of the instant application claims a measuring head (1) including a combination of a contour and geometry sensing tip (4) and a layer thickness measuring probe (30). The measuring head (1) is in turn disposed on a free end of a sensing arm. A plurality of measuring devices each having a measuring head (1) and a sensing arm (12) are provided in a fuel rod testing assembly of the invention of the instant application.

In contrast, Bacvinskas et al. do not show a single measuring device of the above-mentioned kind since none of the measuring devices of Bacvinskas et al. includes a contour and geometry sensing tip and a layer thickness measuring probe combined in a measuring head which is disposed on a single sensing arm.

Further, Bacvinskas et al. do not contain any hint to a person skilled in the art to combine a contour or geometry characteristic sensing tip and a thickness measuring probe into one single measuring head on a free end of a single sensing arm. Rather, Bacvinskas et al. teach using distinct measuring heads. There is also no hint in Bacvinskas et al. to provide a plurality of identical measuring devices each formed by an arm (12) and a head (1). Instead, Bacvinskas et al. teach using merely one single instrument.

Also, the object of the invention of the instant application cannot be achieved by Bacvinskas et al. The measuring head (1) of the invention of the instant application is suitable for providing a contour or geometrical characteristic value and is also configured to measure the thickness of an oxide layer on the surface of a fuel rod to be examined. This is achieved by integrating a thickness measuring probe (30) and a sensing tip (4) with the sensor housing of the measuring head (1) (see page 15, lines 20-26 of the specification of the instant application). An important advantage achieved by the combined provision of a thickness measuring probe and a contour or geometry sensing tip is to allow simultaneous measurement of contour or geometry characteristic values and thickness value at the vary same special area of the fuel rod. The latter is an important condition to be able to take

correlations between the contour and the thickness of the oxide layer of the fuel rod (see page 11, line 18 to page 12, line 17 of the specification of the instant application). In contrast, it can be seen from Fig. 4 of Bacvinskas et al. that the measurement points of an eddy current probe 45 and a magnescale probe assembly 46 (see tip 45 and tip 49) are not only distant from each other but also are on different sides of a fuel rod 3. Fig. 4 of Bacvinskas et al. shows indeed a disadvantageous situation, which is to be avoided by the invention of the instant application. The teaching of Bacvinskas et al., therefore, is in clear contrast to the teaching of the invention of the instant application. In other words, Bacvinskas et al. teach away from the subject matter of the invention of the instant application.

With regard to the reference Petit, the Examiner has simply stated that Petit discloses the applicant's claims except for the sensing tip made of diamond (see the second paragraph on page 7 of the Office action) without pointing out where and how Petit discloses all those features.

The measurement device of Petit is nothing more than an eddy current device determining a length of a fuel rod with regard to certain parameters (see Figs. 7A-7C and column 4, lines 55-60, column 5, lines 30-31, column 6, lines 3-17, column 8,

lines 45-54, and column 10, lines 14-21). Petit does not even disclose measuring a contour or geometry characteristic value by a sensing tip because there is no sensing tip in the disclosure of Petit. Petit discloses an eddy current probe 10. However, the eddy current probe is not adapted to measure a layer thickness of a fuel rod. The eddy current probe of Petit is solely to measure a length of a fuel rod and nothing more (see column 4, lines 55-60, column 7, lines 1-5, column 10, lines 11-21, and Figs. 7A-7C). The disclosure of Petit also provides no hint that an eddy current probe may be used to measure a layer thickness.

Since Petit, as discussed above, discloses none of the important features of claim 1 of the instant application, a combination of Petit and Kleesattel cannot lead to claim 4 of the instant application.

With regard to claim 3 of the instant application, none of the cited references discloses the feature that the thickness measuring probe is disposed behind the sensing tip.

In addition, none of the cited references discloses the features of claims 5, 7, 8, or 9 of the instant application.

In response to the Examiner's statements on page 6 of the Office action with regard to MPEP 2114, it must be emphasized that the "sensing tip," the "layer thickness measuring probe," and "guide rolls" indeed have a distinguished structure because they are part of a "fuel rod testing assembly." The fuel rod testing assembly per se is limited in its structure because of the very specific demands when testing a fuel rod or any of the structural parts of a nuclear engineering installation as claimed in claims 8 and 9 of the instant application. The demands are in particular: high radiation, testing under water and security aspects in general.

Specifically, a fuel rod has diameter within certain margins. This limits the structure of the guide rods. Furthermore, the fuel rod is made of zirconium material, which has effects on a sensing tip. Testing under water puts demands on a sensor housing (water proofed, etc.). Therefore, the statements in the claims are neither "essential method limitations" nor "statements of intended or desired use" as alleged by the Examiner.

In addition, it is noted that a functional limitation is an attempt to define something by what it does, rather than by what it is (e.g., as evidenced by its specific structure or specific ingredients). There is nothing inherently wrong with

defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971). A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. See MPEP 2173.05(g). It is suggested that the Examiner confer with his supervisor regarding the propriety and desirability of using functional statements in claims.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claim 1, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-9 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,

LAURENCE A. GREENBERG
REG. NO. 29,308

For Applicants

YC

September 14, 2004

Lerner and Greenberg, P.A.
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101

Amendment to the drawings:

The attached sheet of drawings includes changes to Fig. 1. This sheet, which includes Fig. 1, replaces the original sheet including Fig. 1. In Fig. 1, a bending joint 11 and a bending angle sensor 13 have now been symbolically shown.

Attachment: Replacement Sheet

Annotated Sheet Showing Changes

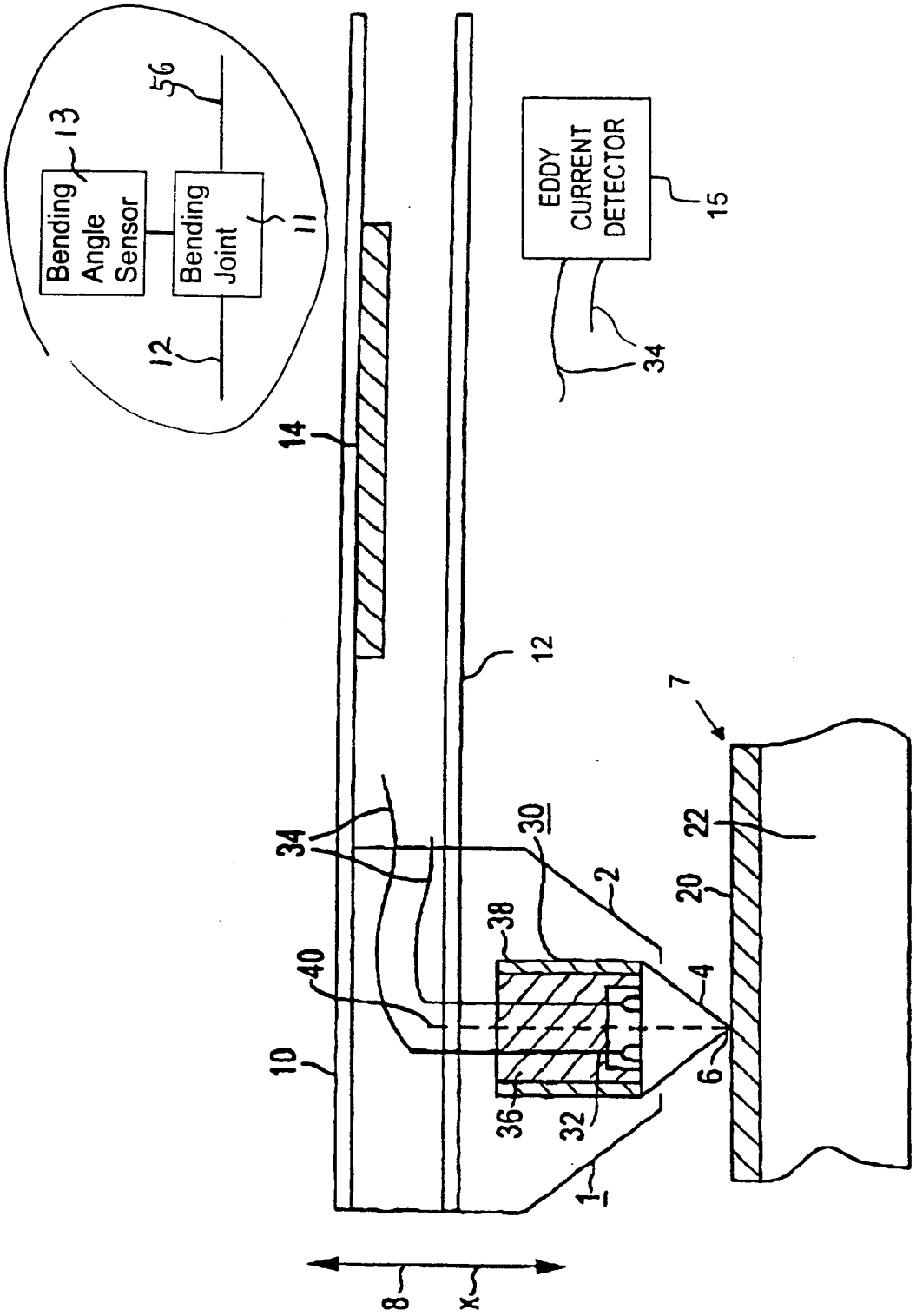
Bending Angle Sensor
13
56
Bending Joint
11
12
EDDY CURRENT DETECTOR
15
34
14
12
7
34
30
22
2
20
38
40
4
10
6
36
32
1
8
X

FIG. 1